ASSESSMENT OF CONSTRUCTION PAYMENT PROBLEMS IN PUBLIC BUILDING CONSTRUCTION PROJECTS IN ADDIS ABABA

TSEDENIYA FITHAWOK

MASTER OF BUSINESS ADMINISTRATION

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By

TSEDENIYA FITHAWOK

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Declaration

I hereby declare that this thesis entitled "**Assessment of Construction Payment Problems in Public Building Construction Projects in Addis Ababa"** was composed by myself, with the guidance of my advisor, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted, in whole or in part, for any other degree or processional qualification.

Name: Tsedeniya Fithawok _____

Certificate

This is to certify that the thesis prepared by Ms. Tsedeniya Fithawok entitled "**Assessment of Construction Payment Problems in Public Building Construction Projects in Addis Ababa"** and submitted in fulfillment of the requirements for the Degree of Master of Business Administration complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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ABSTRACT

Proper payment in a construction contract is very essential and it is one of the major factors that determine the fate of a construction project whether to be successful or not. The thesis is mainly interested in identifying the major payment problems, their causes and their effect and consequences in public building construction projects that are being undertaken in Addis Ababa. Payment problems in the construction industry may differ from delayed payments to partial certification (under certification) of payments and/or none payment of sums due. The research identified which of those problems are there in the public building construction projects, along with their causes based on which party causes what, and the consequences they had on the projects as well as the parties to the contract. Questionnaire was mainly used as a data collection instrument and it is distributed and delivered in person to the representatives of three target groups (the employer, the contractor and the consultant) who are believed to have sufficient know-how about a specific project under study, in their respective construction sites. The data from the questionnaire was analyzed in mean score method and spearman rank correlation is used to test for correlation between respondents' response. Result of the survey indicates that payment delay is common problem and the major causes of these problems are bureaucratic payment system of the employer, the consultant's favoring the employer (bias) and the contractor's failure to make regular progress. The effects of these problems are seen on the project's completion time, on the project's cost and on contractors involved in the project i.e. bankruptcy of their company. Finally, based on the analysis of the results, recommendations like minimizing bureaucracy, working with ethics and without bias, have been proposed for key stake holders (the employer, the contractor and the consultant) that enable to minimize the adverse effect of payment problems and favor the construction industry for better performances.

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CHAPTER 1 INTRODUCTION

1.1. Background of the study

The objective of **"**Construction Projects" would be achieved by managing time and progress, cost and cash flow, quality and performance and organizational behavior. It is essential to implement optimum planning, scheduling, organizing, directing, monitoring and controlling the organization resources. (Potts, 2008)

The underlying problems of the construction sector can be classified into two main categories. The first is related to the consequences of the fact that the sector is not viewed and planned in an integrated manner, but rather, operates with fragmented, unrelated and often conflicting components. The result is wastage, inefficiency, and inability to plan for total development. The second problem is related to deficiencies in the specific inputs; physical resources, manpower and finance required for the supply of construction output. (Chandra, 2006)

According to Zerfu (2012) construction projects involve various financial transactions among different stake holders with in the industry. A generalized financial flow of a construction project between a contractor and other major business participants are shown in Figure 1.

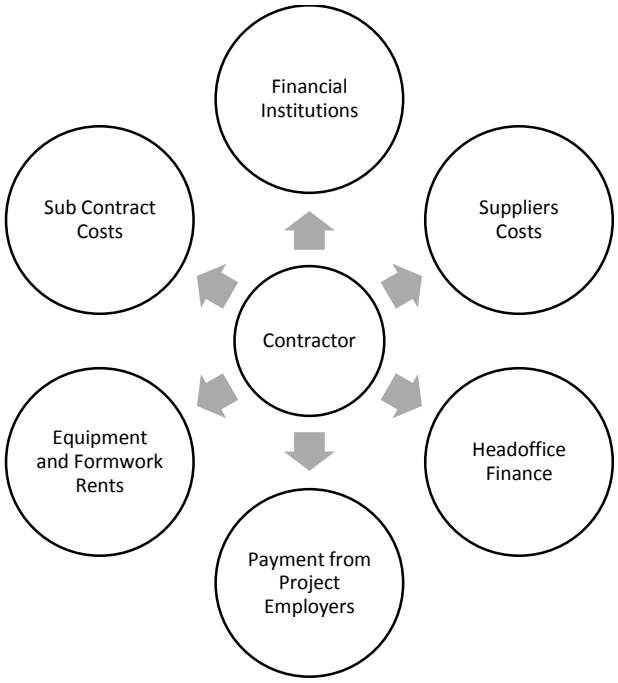

Figure 1: Financial flows in a construction project

Payment from Project Employers is one of the sources of finance which has its peculiar set of problems in the sector which is the concern of this research paper. Hence, this study focuses on construction payment issues by identifying the problems of construction payments, their causes and also their effects on projects particularly in public construction projects.

1.2.Statement of the problem

Ethiopia is one of the fastest-growing, non-oil driven economy among African countries. The country has showed a remarkable growth over the past ten years with average annual growth GDP of 10.9% (UNDP, 2014). Recently, the contribution of the industry sector (which is 21.2%) and particularly that of the construction sector to the national economy is given high prominence and is mainly driven by the energetic performance of the construction sub-sector. (ECIDP, 2014)

Despite the construction sector has high importance, several defects are being noted in the sector that require immediate action. The primary challenge of a project is the handling of constraints to meet the desired goal; where one aims to honor the primary constraints of time and budget to produce quality result. Thus the problems associated with the lag of the project will depend on the appropriate use of finance or budget and time. (Zewdu, 2016)

Finance or budget for construction projects can be found from various directions from different stakeholders with in the industry; financial institutions, project employers as a form of payment for the amount of work executed and from own capital. (Zerfu, 2012) Many studies have been done focusing on financial problems of contractors, the constraints they face from financial institutions, about their capacity to finance construction projects and the effect of cost overrun on projects.

However there is no study which separately studies the problem related with construction payment which is one source of finance for projects, to my knowledge. Hence it would be wise to study this portion of finance source to understand the overall finance problem in the industry. Thus this paper tries to study in detail the problems that are associated with the payment system and their causes and their effect on projects particularly in public construction works.

1.3 Objective of the study

The general objective of the research is

- to assess construction payment problems in public building construction projects in Addis Ababa.

The specific objective of the research is

- identify the major payment problems,
- to find out the major causes of the identified problems
- to find out the consequences and effects of these problems
- to draw conclusions and give recommendations based on the research findings and indicate areas for further study.

1.4. Research questions

The research will be conducted based on the following questions and each of them will be addressed throughout the research process.

- What type of construction payment problems are there in public building projects in Addis Ababa?
- What are the causes of these problems in public building projects in Addis Ababa?
- How do these payment problems affect public building projects in Addis Ababa and what are the consequences?

1.5. Significance of the study

The study focuses on what major payment problems are there in public building construction projects in Addis Ababa and it also investigates the main causes and consequences of the problems on those projects. So, the findings of this research will enhance the awareness of the key stakeholders of a contract and other professionals in the construction industry, about construction payment problems that are common in public building construction projects in Addis Ababa. It will also provide the main participants with a better understanding of the causes and consequences of the problems on the projects and will assist them in dealing with the problems which again leads to improved working relationship between them.

The significance of the study can help the employer to achieve successful project outcomes, the contractor to maximizing cost savings and reduce risks and the consultant to satisfy and work fairly to the major parties.

1.6. Scope of the study

The research is titled as **Assessment of Construction Payment Problems in Public Building Construction Projects in Addis Ababa.** The scope of the research is public building construction projects owned by three public agencies; Addis Ababa City Administration, Addis Ababa Saving Houses Development Enterprise and Addis Ababa Housing Development Project Office and constructed by contractors of category grade one up to grade four.

1.7. Limitation of the study

Constraints of time, research budget, and logistical problems shade considerable limitations on the scope, coverage, and sampling size of the paper. Since the study is limited to projects owned by three public agencies it did not examine and discuss other public building construction projects.

1.8. Structure of the Thesis

This thesis has five chapters; Chapter one explains the background of the research and spells out what the research intends to achieve. Chapter two form literature review of the thesis that provides a general understanding and theories related to the research area. This will also provide some bases for the analysis of the main issues. Chapter three discusses the methods that are used for the research. It is followed by chapter four which is dedicated to the analysis and discussion of the results obtained from the study. The last chapter draws conclusion of the research and provides some recommendations for improvement in the construction sector.

1.9. Definition of terms

Construction Payment; is an agreed sum of money paid by the employer to the contractor.

Employer; is the party who employs the contractor to carry out the works.

Contractor; is the party that takes on the obligation to construct the works.

Consultant; is the party responsible for supervising the execution of the works and acts as an independent inspector of what should be paid to the contractor.

CHAPTER 2 LITERATURE REVIEW

2.1. Construction Contracts

2.1.1. Introduction

There is no single definition for contract. Chappell, Marshall and Cavender (2001) a contract is a binding agreement between two or more persons which creates mutual rights and duties and which are enforceable at law.

A contract is a promise or multiple promises, normally between two or more people or organizations, called "contracting parties," agreeing to undertake certain legally enforceable duties or obligations in exchange for certain legally enforceable rights or entitlements. (Bennett, 2003)

Oxford English dictionary defines contract as 'An agreement between two or more parties, to perform a specific job or work order, temporary or of fixed duration and usually governed by a written agreement.'

Murdoch and Hughes (2000) explains construction contract as 'any agreement in writing, or evidenced in writing, under which a party does any of the following:

- Carries out construction operations.
- Arranges for others to carry out construction operations (for example through sub-contracts).
- Provides labor for the carrying out of construction operations.'

Article 1675 of the civil code of Ethiopia defines a contract as, "a contract is an agreement whereby two or more persons as between themselves create, vary or extinguish obligations of a proprietary nature."

According to Art.3244 of the civil code of Ethiopia, contract of public works is defined as "A contract of public works is a contract where by a person, the contractor, binds himself in favor of an administrative authority to construct, maintain or repair a public work in consideration of a price."

Under Clause 1(g) MoWUD (1994) it is defined that contract means the Conditions of Contract, Specifications, Methods of Measurement, Drawings, priced Bill of Quantities, Schedule of Rates and Prices, the Letter of Acceptance, the Contract Agreement, Addenda and other documents issued thereof.

A construction contract is an agreement between two parties which they intend it to be legally binding with respect to the obligations of each party to the other and their liabilities. The contract thus binds the contractor to construct the works as defined, and the employer to pay for them in the manner and timing set out. (Twort & Rees, 2004)

There are various explanations about the main components or elements of construction contract. Uher and Davenport (2002) stated that there are seven elements that are generally regarded as essential to the legitimacy of a contract:

- There must be an intention to create a legal relationship; each party must have the intention to create binding legal obligations.
- There must be offer and acceptance; one party must accept an offer made by the other party.
- There must be valuable consideration; each party must provide consideration to the other party
- The terms of the contract must be sufficiently certain; the right and obligation of each party must be complete and certain.
- The parties must have legal capacity to contract.
- There must be a genuine consent by the parties.
- The legality of the object of the agreement must be ensured.

According to Art.1678 of the Civil Code of Ethiopia, no valid contract shall exist unless; the parties are capable of contracting and give their consent sustainable at law, the object of the contract is sufficiently defined and is possible and lawful and the contract is made in the form prescribed by law.

Dinku (2007) the fundamental elements of contract are

Capacity of the contracting parties; Capacity refers to competence to enter into a legally binding agreement. Parties entering into an agreement or contract shall, therefore, be capable of contracting.

Consent of the contracting parties; Consent is a declared will of the individual to enter into contract.

Object of the contract; Object of contract is the very obligations of the contracting parties i.e. in the construction contract, the obligations of the employer and of the contractor.

Form of contract, Form refers to the types of contract. It may also mean the making of the contract orally or in writing

2.1.2. Types of Construction Contracts

One of the principal methods of classifying contracts is based on the method by which the contract price is established and subsequently payment is made to the contractor. (Gould & Joyce, 2003)

Re-measurement contracts

In this type of contract the contractor executes the work on an item rate basis. The amount to be received by the contactor depends upon the quantities of various items of work actually executed.

It is used for works where it is impossible to calculate in advance the exact quantity of materials that will be required; hence, require sufficient design definition to estimate quantities of units. (Dinku, 2007)

In a unit price/ Re-measurement contracts, the risk of inaccurate estimation of uncertain quantities for some key tasks has been removed from the contractor. Depending on the confidence of the contractor on its own estimates and its propensity on risk, a contractor can

slightly raise the unit prices on the underestimated tasks while lowering the unit prices on other tasks. If the contractor is correct in its assessment, it can increase its profit substantially since the payment is made on the actual quantities of tasks; and if the reverse is true, it can lose on this basis. (Hendrickson, 2003)

The advantages of re-measurement contracts are that the contractor can be paid fairly for the amount of work he has to do, and the employer only has to pay for work actually required, without having to pay a premium to the contractor for the risk of undertaking, at his own cost, extra work due to quantity changes. Thus if no major unforeseen conditions are encountered and the employer orders no extra work, the cost of the job to the employer will come very near the original sum tendered. The use of bills of quantities has been the normal method of payment in standard forms of contract for many years. This method is particularly effective where the employer wishes to control the design, or has the works largely designed before going out to tender. (Twort & Rees, 2004)

Benator and Thumann (2003) stated that these require sufficient design definition or experience in order to estimate the unit/quantities for the work. Contractors then bid fixed prices for each unit of work. The advantage is that the time and cost risk is shared: the owner will be responsible for the total quantities, and the contractors will have the risk of the fixed unit price.

Lump sum contracts

In this type of contract, a single lump sum price is quoted for the completion of the specified work to the satisfaction of the employer within certain duration. The contractor offers to do the whole work as shown in drawings and described by specifications, for a total stipulated sum of money. (Dinku, 2007)

In a lump sum contract, the owner has essentially assigned all the risk to the contractor, who in turn can be expected to ask for a higher markup in order to take care of unforeseen

contingencies. Beside the fixed lump sum price, other commitments are often made by the contractor in the form of submittals such as a specific schedule, the management reporting system or a quality control program. If the actual cost of the project is underestimated, the underestimated cost will reduce the contractor's profit by that amount. (Hendrickson, 2003)

(Gould & Joyce, 2003) defines lump sum contract as, a contract where a party undertakes to complete the whole of the work for a stated and fixed amount of money payable by the other. this is so even though it may contain express stipulations permitting adjustment of the contract sum for eventualities such as variations, payment for extended preliminaries, etc. what is important is that at the time of contracting, both parties must have agreed upon a lump sum price to be payable for a defined scope or quantity of work to be undertaken.

Twort & Rees (2004) stated that a lump sum price may be best suited to easily defined, relatively simple constructions, involving little below-ground work. Payments under lump sum contracts are usually made in installments as set out in the contract according to stipulated stages of completion, or linked to a program or activity schedule. A disadvantage is that an employer may have to pay a high price for any alteration or addition he wants to the project, because the contractor is only committed to undertaking a fixed amount of work for the fixed payment.

Benator and Thumann (2003) added that in this type of contract, the contractor is generally free to employ whatever methods and resources it chooses in order to complete the work. The work to be performed must be closely defined. Since the contractor will not carry out any work not contained in the specification without requiring additional payment, a fully developed specification is vitally important. The work has to be performed within a specified period of time, and status/progress can be monitored by the owner to ensure that completion meets the contractual requirements.

Cost reimbursement contracts

According to Dinku (2007) cost reimbursable contracts are used in situations that are difficult or impossible for either the owner or the contractor to predict their costs during the negotiation, bid, and award process. The contractor agrees to furnish to the client services and material at actual cost, plus an agreed up on fee for these services. Actual cost plus a negotiated reimbursement to cover overheads and profit can be done with different methods of reimbursement: Cost plus fixed fee, Cost plus fixed percentage, Cost plus variable percentage and Target cost/estimate.

In a reimbursable contract the contractor is usually reimbursed his expenditure monthly on submission of his accounts, which must include evidence of payments made to suppliers of materials, gross wages paid to employees, and hours operated by plant. Where a fixed fee has been agreed for his overheads and profit, this is usually paid in stages as the contract sets out. Under any cost reimbursement contract it is essential to detail just what costs are to be paid, and which are covered by the fees or other sums. It may also be necessary to identify the risks carried by each party to determine whether some costs are to be excluded. (Twort & Rees, 2004)

2.1.3. Contract Document

Contract document is the means by which a designer's intentions are conveyed to the client, the statutory authorities, the quantity surveyor, the contractor and the sub-contractors. It is important, because it describes and records all aspects of the project. The contractor's basic responsibility is to carry out the works in accordance with these contract documents. (Murdoch & Hughes, 2000)

Contract Documents (graphic and written) describe the proposed construction (the 'Work') that results from performing services, furnishing labor, and supplying and incorporating materials and equipment into the construction. (Dinku, 2007)

According to Murdoch & Hughes (2000) a contract document includes articles of agreement, conditions of contract, appendix, drawings, specifications and bill of quantities.

Articles of agreement

The articles of agreement record in general terms what the parties have agreed to do. They identify the parties to the contract, what is to be built (the contractor's obligation) and what is to be paid (the employer's obligation). They tie these obligations to the conditions and to the other contract documents. Potts (2008) adds that the agreement is the document that represents and reflects the legal contract between the owner and the contractor. And the purpose of the agreement is to record in written form those items agreed between the owner and the contractor.

Conditions of contract

The conditions of contract are the very detailed clauses that follow on from the articles of agreement. The purpose of the conditions is to amplify and explain the basic obligations the parties undertake by signing the articles of agreement. The conditions also provide administrative mechanisms for ensuring that the correct procedures are observed. Effective contract clauses of this kind deal efficiently with what would otherwise be breaches of contract, and therefore ensure that the contract is kept 'alive'. (Murdoch & Hughes, 2000)

Appendix

Murdoch & Hughes (2000) certain facts relating to the execution of a building contract will differ from one project to another. To enable standard-form contracts to be used in spite of these differences; the facts concerned can be summarized in an Appendix to the contract. The Appendix contains such items as the starting date (or date for possession), completion date (or duration of the contract), defects liability period and amount of liquidated damages.

The contents of the Appendix are of fundamental importance in assessing the amount and duration of responsibility accepted by the parties. Therefore, close attention should be paid to the entries in the Appendix.

Drawings

Drawings are the vehicle by which the designers' intentions are conveyed to the contractor. The detail design drawings contain information that shows how the separate parts of the building interact with each other. The detailed information from specialist sub-contractors and from other designers is co-ordinated and presented through such drawings. Potts (2008) adds that, drawings are the means by which the designer conveys the physical, quantitative, and visual description of the project to the contractor.

Specifications

Drawings provide information about the shape, appearance and location of the various components that have to be assembled but they convey little about the methods to be used, the quality of finishes and the workmanship to be employed; this is a matter for the specification. Potts (2008) specification is a written standard to be used in conjunction with the drawings, so together with drawings and the specifications fully describe and define the requirements of the contract, to include the quality that is to be achieved.

Bills of Quantity

Murdoch & Hughes (2000) Bills of quantity will play a great role in the valuation of variations and interim certificates, and in the control of the works. In addition, various other categories of information are often collected from the bills, such as the location of work and basic cost planning data.

2.1.4. Contracting Parties in Construction Contracts

Dinku (2007) the formal contracting parties to the construction contract are basically the Contractor and the Employer. However, because there is a need for day-to-day supervision of civil engineering construction works, the two parties may agree that a third person should carry out such duties; the Engineer.

The employer

The "employer" as defined in the public procurement agency (PPA) condition of contract, is the party who employs the contractor to carry out the works and means "procuring entity".

Employer is the party who initiates the process of acquiring the works. He sets down what he requires and specifies this in the tender documents, which he issues to firms of contractors to seek their offers to carry out the works. His obligations include ensuring that the works are legally acceptable and practical, and that the site for them is freely available. Having set up these basic elements he must, above all, ensure that he can meet his obligation to pay the contractor in accordance with the contract. (Twort & Rees, 2004)

FIDIC (2006) states that the Employer shall submit, before the Commencement Date and thereafter within 28 days after receiving any request from the Contractor, reasonable evidence that financial arrangements have been made and are being maintained which will enable the Employer to pay the Contract Price punctually (as estimated at that time) in accordance with Clause 14 [Contract Price and Payment].

The event of the employer's failure to make payments is stated in the PPA condition of contract sub clause 43.1 as "…the employer shall pay the contractor the amounts certified by the engineer within 30 days of the date of each certificate. If the employer makes a late payment, the contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made."

The primary obligation upon the employer is to give the contractor the sum of money which forms the consideration for the contract. Money must be paid promptly and fully unless there are specific reasons for withholding it. (Murdoch & Hughes, 2000)

The contractor

Twort and Rees (2004) stated that this is the party that takes on the obligation to construct the works. In his offer to the employer he puts himself forward as being able to build the works to the requirements set out in the tender documents. In order to do this he will have studied the

documents and any geotechnical or other information provided or otherwise available, visited the site and checked the availability of such labor, plant and materials as may be needed.

Under clause 60(2) of the MoWUD condition of contract it is stated that 'the Contractor will be paid monthly, within 30 days of the presentation of the Engineer's Interim Payment Certificate to the Employer, 100% of the estimated value of the work executed up to the end of the previous month, together with the value of materials on Site intended to form part of the permanent work as and from such time as they are reasonably, properly and not prematurely brought upon the Site but only if adequately stored and/or protected against weather or damage.'

In the construction industry, a contractor is invariably the person, partnership or company which carries out construction work. All the standard forms of contract refer to the contractor in this sense. (Chappell, Marshall and Cavender, 2001)

Most if not all, construction contracts include an express or an implied undertaking by the contractor that, except in certain specified circumstances, he must complete the works and the project as a whole. With the exception of contracts of professional services, all other construction-related contracts are based on the premise that liability for non-performance of contractual obligations is a strict one. Failure to perform the required duties under such a contract would give rise to a claim for damages. (Bunni, 2003)

The Engineer

The "engineer" under the PPA condition of contract, is the person named in the special conditions of contract (or any other competent person appointed by the employer and notified to the contractor, to act in replacement of the engineer) who is responsible for supervising the execution of the works and administering the contract.

Twort and Rees (2004) justified that the engineer is not a party to the contract; but he is named in it with duties determined by the parties. Although he is appointed and paid by the employer, he has to supervise the construction of the works as an independent person, making sure they accord

with the specified requirements. He also acts as an independent inspector of what should be paid to the contractor, and as a decider of issues arising in the course of construction.

Under clause 60(5) of the MoWUD condition of contract it is stated that 'the engineer shall have power to withhold any certificate if the works or any part thereof are not being carried out to his satisfaction or to deduct the value of damaged materials, plant or equipment supplied by the employer to the contractor or the purposes of the works in the event of such damage being caused by the contractor's negligence or mishandling.'
But, the problem comes where money is clearly due to the contractor under the terms of the contract and an engineer wrongfully withholds a certificate of payment.

Murdoch and Hughes (2000) justify that if the contract administrator refuses to certify at the appropriate time, or negligently under-certifies, this may well constitute a breach of contract on the employer's part. It certainly will do so if the contract administrator's conduct is due to positive interference by the employer. Such events will undoubtedly enable the contractor to claim damages, or possibly to recover what is due without the necessity of a certificate. Whether they will justify termination of the contract will once again depend on whether the breach is sufficiently serious to be regarded as repudiator.

2.2. Contract Administration

Contract Administration is the maintenance and oversight of a project to ensure that all provisions of the contract are met. Contract Administrator fulfills two very different roles. First, there are those duties (such as providing necessary information to the contractor), which are carried out as agent of the employer. Second, there are certain decision making functions (such as the certification of work properly carried out) in which the contract administrator is required to act fairly between the parties and exercise independent judgment. (Murdoch & Hughes 2000)

Dinku (2007) the purpose of contract administration is to see that the contract is properly administered in parallel with the execution of works. It is also to ensure that the contractor receives fair and proper payment for the works executed. Main issues to be considered in contract administration are

- Variations,
- Delays, Time extension, and Liquidated damage,
- Payment,
- Termination,
- Claims

2.2.1. Contract Administration for Clients

Effective administration of construction contracts is a prerequisite for achieving successful project outcomes (Uher & Davenport, 2002). They also stated that the fundamentals of contract administration relevant to the clients are:

- To pay the contractor strictly in accordance with the contract
- To appoint suitable consultants
- To define project scope
- To set the key project objectives of cost, time and quality
- To assist in formulating a project brief
- To select the most appropriate method of project delivery
- To ensure accuracy and completeness of tender documentation
- To award a contract to the contractor on fair and equitable conditions of contract
- To appoint an experienced superintendent for administering the contract during the construction stage
- To avoid making changes to the design unless knowing the cost and time impact of such changes
- To monitor progress and the use of a contingency
- To resolve issues as early as possible before they develop into major problems

- To document actual progress in terms of cost, time and the use of resources to be able to defend against a potential claim from the contractor
- To advise the contractor in writing of any deviation from contract conditions and to request compliance with same within a specified period.

FIDIC (2006) the obligations of the employer is generalized as Payment obligation, Risk sharing obligation and Acceptance obligation.

2.2.2. Contract Administration for Contractors

Uher and Davenport (2002) the fundamental aspects of contract administration from the contractor's point of view are:

- To execute the project strictly in accordance with the contract conditions
- To award subcontracts on fair and equitable subcontract conditions
- To monitor and control progress of subcontractors
- To pay subcontractors on time
- To minimize overall project time, thus reducing site overheads
- To balance increased direct costs of additional resources on critical activities, against possible saving in site overheads
- To advise the principal early in the project that the program is arranged to
- maximize use of resources and any additional work required
- To allow sufficient time to rearrange activities, acquire additional resources, perform additional planning, fabrication, etc.
- To manage extensions of time and a prolongation of overhead costs
- To recommend to the principal not to make any changes to the design
- To document the actual progress compared with a program to identify areas of progress loss
- To take immediate action on contractor-caused problems and immediately advise the principal of other problems
- To instruct all internal staff to carry out work as specified in the contract documents, unless written instructions have been given by the principal's representative.

Benator and Thumann (2003) it is essential that the administration and management of contracts results in reducing risks, maximizing cost savings, minimizing claims and improving economic return. These results can only be achieved through effectively managing contract risks: developing fair contract documents, engaging in effective negotiating practices, and employing outstanding communication skills.

Twort and Rees (2004) also added that the advantage of employing an engineer who has to administer the contract impartially is that both the employer and the contractor can expect their interests to be dealt with fairly. The contractor can expect fair payment for extra work ordered or arising from some unforeseen trouble, his risks are reduced, thus enabling him to submit his keenest prices. Both the employer and the contractor can, however, challenge any decision of the engineer by taking the matter in dispute to a conciliation procedure, adjudication, or to arbitration for settlement.

FIDIC (2006) the obligations of the contractor is generalized as Completion obligation, Quality performance obligation, Timely performance obligation.

2.2.3. Contract Provisions Used in Contract Administration

Conditions of contract are included within the contract to express the relationship between employer and contractor and to define clearly what is to happen if that relationship is disturbed by the failure of either party to fulfill their obligations. Benator and Thumann (2003) stated that while the same risks/liabilities can be established for most forms of contract, the price for those risks/liabilities can vary significantly, depending on contracting skills and the business environment/market place.

Bennett (2003) justifies that, Conditions of contract are often conveniently described as being either 'general' or 'special'. Special conditions may be required, either because of some issue not dealt with in the general conditions or because the employer wishes to have the general conditions modified in certain respects.

2.2.3.1. General Conditions of Contract

Dinku (2007) a document called the General Conditions is an essential part of the contract. It defines the responsibilities of the parties involved in the contract, the owner and the general contractor. It describes the guide lines that will be used in the administration of the contract. Various standard forms of General Conditions have been developed by different organizations such as FIDIC, BaTCoDA, MoWUD and PPA etc.

2.2.3.2. Special Conditions of Contract

Dinku (2007) the purpose of the Special Conditions is to provide an extension of the General Provisions of the contract to fit the specific project at hand. They serve as amendments or augmentation to the general conditions. Items included in the special conditions are entirely subject to the discretion of the owner. Special conditions of contract may include topics such as materials provided by the owner, changes in insurance requirements, cost and schedule reporting requirements.

2.2.3.3. The Public Procurement Agency (PPA) general conditions of contract

The public procurement agency, under its legal mandate provided under the public procurement proclamation, it has prepared & issued certain standard tender & contract documents for the purpose of public procurement. The conditions of contract are applicable to the procurements of the federal government. The conditions of contract are based on design-bid-build project delivery system and the type of contract could be based on bill of quantities or BOQ, in which case it becomes measurement based and/or based on activities schedule, in which case it becomes lump sum.

2.2.3.4. The Ministry of Works & Urban Development (MoWUD) Standard Conditions of Contract

This condition of contract is officially, known as "Standard conditions of contract for construction of civil work projects". It has been in practice since December, 1994 and it contains 75 clauses including form of agreement & form of performance bond. Its structure & content resembles that of FIDIC standard conditions of contract for civil engineering works, fourth edition, 1987. The project delivery system adopted is that of design-bid-build. The type of contract is based on bill of quantities or BOQ i.e. it is an ad measurement contract.

2.3. Contract Price

Murdoch and Hughes (2000) the price for the work is typically referred to as the contract sum, contract price or tender total. The importance of the price is emphasized by the extent to which contracts supply very specific definitions of what is included and how it can be changed. The contract price is defined in MoWUD standard condition clause 1(h) as it means 'the sum named in the letter of acceptance, subject to such additions thereto or deductions there from.'

2.3.1. Provisional Sums

Clause 58(1) of the MoWUD condition of contract defines a provisional sum as provisional sum means a sum included in the contract and so designated in the bill of quantities for the execution of work or the supply of goods, materials, or services, or for contingencies, which sum may be used, in whole or in part, or not at all, at the direction and discretion of the engineer. The contract price shall include only such amounts in respect of the work, supply or services to which such provisional sums relate as the engineer shall approve or determine in accordance with this clause.

The use of provisional sum is explained in FIDIC (2006) clause 58.2(a), in respect of every provisional sum the Engineer shall have authority to issue Provisional instructions for the execution of work or for the supply of goods, materials, Plant Sums or services by the Contractor, in which case the Contractor shall be entitled to an amount equal to the value thereof determined.

A provisional sum is a nominated amount of money, usually estimated by the engineer's quantity surveyor, where the exact amount and cost of a specific work cannot be determined at the start of the contract. It is included in the original contract sum, but is monitored carefully, so that the sum can be adjusted as required. (Hendrickson, 2003)

Uher and Davenport (2002) stated that the contractor is entitled to be paid the agreed price for the work. Whether that price is reasonable or not is irrelevant. The contract price is dealt with in different ways by different contracts. With bills of quantity, the bid by the contractor is based upon the work described and quantified in the contract bills. If any quantities are altered because of variations in the client's requirements, then the contract sum will be altered. Otherwise, the contractor is paid the amount of the tender.

Murdoch and Hughes (2000) the contract sum may be changed for a variety of reasons it is divided into three groups.

i. Reimbursement of the contractor for certain expense caused by the contract administrator, employer, or certain events outside the control of the contractor.
ii. Payment for extra work brought about by a contract administrator's instruction.
iii. Reimbursement of extra expense brought about by market fluctuations affecting the contractor's inputs.

2.4. Construction Payment

2.4.1. Introduction

Payment in a construction contract is an agreed sum of money paid by the employer to the contractor. The provisions relating to payment concern the way the contractor is paid by the employer. The consideration given by the employer to the contractor is not always a fixed amount of money. However, there are only certain circumstances in which the contract sum can be changed and the most important of these is where there are variations. (Murdoch and Hughes, 2000)

The contractor undertakes to carry out and complete the works in return for the employer's promise to pay him a named sum of money. This money under the MoWUD conditions of contract clause 58 is named as "provisional sum". This sum, adjustable in defined circumstances, is to be paid to the contractor at times and in a manner specified in the conditions. The employer usually makes an advance payment so that the contractor will not face financial problem in mobilization of equipment and materials for the project.

2.4.2. Types of Payments

Advance payment

FIDIC (2006) clause 14.2 states that the employer shall make an advance payment, as an interest-free loan for mobilization and cash flow support, when the Contractor submits a guarantee in accordance with this Sub-Clause. The total advance payment, the number and timing of installments (if more than one), and the applicable currencies and proportions, shall be as stated in the Contract Data.

Clause 51(1) of PPA (2006) also states that the employer shall make advance payment to the contractor of the amount stated in the special conditions of contract by the date stated in the special conditions of contract, against provision by the contractor of an unconditional bank guarantee in a form and by a bank acceptable to the employer, denominated in Ethiopian birr in the amount of the advance payment. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the contractor and interest will not be charged on the advance payment.

Interim payment

Schexnayder and Mayo (2004) one of the most important aspects of any owner's reputation with contractors is the time required to process the payment after submission of the monthly pay estimate by the contractor. Slow payment or delayed payment leads to higher bids and fast payment leads to lower bids. The actual process of submitting the monthly pay estimate involves estimating the percentage of completion of each job activity, calculating the amount due for each of those activities, and subtracting the retention money from the total.

In Clause 43.1 of the PPA (2006) it is stated that the Employer shall pay the Contractor the amounts certified by the Engineer within 30 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest on the late payment in the next payment.

Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.

FIDIC (2006) clause 14.7(b) says the Employer shall pay to the Contractor that the amount certified in each Interim Payment Certificate within 56 days after the Engineer receives the Statement and supporting documents; or, at a time when the Bank's loan or credit (from which part of the payments to the Contractor is being made) is suspended, the amount shown on any statement submitted by the Contractor within 14 days after such statement is submitted, any discrepancy being rectified in the next payment to the Contractor.

Clause 60(2) of the MoWUD conditions of contract also justifies that "the contractor will be paid monthly, within 30 days of the presentation of the engineer's interim payment certificate to the employer, 100% of the estimated value of the work executed up to the end of the previous month, together with the value of materials on site intended to form part of the permanent work as and from such time as they are reasonably, properly and not prematurely brought upon the site but only if adequately stored and/or protected against weather or damage. Payment shall be subject to retention in the sum of 10% of value certified until completion of the works. The amount shall be reduced to 5% at completion, which sum shall be retained until the expiration of the maintenance period."

Final payment

Clause 60(6) of the MoWUD condition of contract states that, not later than 30 days after the date of issue of the maintenance certificate the contractor shall submit to the engineer a statement of final account with supporting documents showing in detail the value of the work done in accordance with the contract together with all further sums which the contractor considers to be due to him under the contract. Within 30 days after receipt of this final account and of all information reasonably required for its verification, or after the issue of the maintenance certificate, whichever is the later, the engineer shall issue a final certificate.

FIDIC (2006) clause 14.7(c) says the Employer shall pay to the Contractor the amount certified in the Final Payment Certificate within 56 days after the Employer receives this Payment Certificate; or, at a time when the Bank's loan or credit (from which part of the payments to the Contractor is being made) is suspended, the undisputed amount shown in the Final Statement within 56 days after the date of notification of the suspension.

2.4.3. Payment Certificates

Under a construction contract, there is usually a prescribed time for the engineer to issue a progress certificate and the issue of such a certificate by the engineer imposes upon the employer a strict obligation to make payment. (Potts, 2008)

Murdoch and Hughes (2000) justify that payment certificates exist simply as a mechanism for confirming that an installment of the consideration is due to the contractor. Anything included in such a certificate may yet be the subject of a later certificate. It is only the final certificate that is ever conclusive which signifies the contract administrator's satisfaction with the work, or the amount that is finally due to the contractor, or both of these things. As a result, the only obligation arising from an interim certificate is an obligation on the employer to make a payment within the stated time. Failure to do so is a serious breach of contract.

Under the MoWUD condition of contract clause 60(1) it is stated that the amount to be included in an interim certificate should cover;

(a) The quantities and value of the permanent work executed on Site.
(b) The value of materials on site intended to form part of the permanent work together with supporting invoices.
(c) The value of temporary work, as included in the bill of quantities and completed on Site.
(d) An amount reflecting any changes in cost pursuant to clause 70 hereunder.
(e) Amounts approved in respect of day works executed up to the end of the month in question.
(f) The monthly statements shall be in an approved form and shall comprise an original and one copy, each duty signed by the contractor.

The standard conditions of contract for construction of civil work projects (MoWUD, 1994) places the responsibility for carrying out interim valuations and calculation of what is due and finally issuance of the interim certificates upon the engineer. Clause 2 of this condition of contract provides the engineer to issue this certificate in response to the contractor's request for payment. If the engineer believes that the work has progressed to the point indicated and the quality of the work is in accordance with the contract documents, such a certificate can be issued for each periodic payment request.

Certification is the most important aspect of these decision-making powers related to the issue of certificates. These have been defined by Nunnally (2007), as the expression in a definite form of the exercise of the judgment, opinion or skill of the engineer, architect or surveyor in

relation to some matter provided for by the terms of the contract. However, this does not mean that every expression of opinion or decision given by the contract administrator will amount to a certificate. It will only be a certificate if it is so described in the contract, or can be so treated by implication

2.4.4. Variations

Variations are a fact of life in building contracts. There can only be a minority of contracts of any size in which the subject matter when completed is identical in every respect with what was contemplated at the outset. It is sometimes said that the bill of quantities system of contracting makes it too easy for a building owner or his team to change their minds. The effects of such changes can be easily seen and readily evaluated, and there is therefore a lack of incentive to make firm design decisions before work starts on the site. This does not allow for the additional loss and/or expense which might be claimed. (Chappell, Smith & Sims, 2005)

Under clause 51(1) of the MoWUD conditions of contract it is stated that the engineer shall make any variation of the form, quality or quantity of the works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion be desirable, he shall have power to order the contractor to do and the contractor shall do any of the following:-

(a) Increase or decrease the quantity of any work included in the contract,

(b) Omit any such work,

(c) Change the character or quality or kind of any such work,

(d) Change the levels, lines, position and dimensions of any part of the works, and

(e) Execute additional work of any kind necessary for completion of the works and no such variation shall in any way vitiate or invalidate the contract, but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the contract Price.

Bennett (2003), changes, also known as variations, arises for many reasons like;

- The owner may decide to add some new item to the project.
- Delete some portion of it or add to, reduce or modify an already defined part of the job.
- Unexpected site conditions discovered during the course of construction, including soil conditions, archaeological findings, endangered species or hazardous materials, may require a change.
- Discrepancies may be discovered in the contract documents.
- Codes or regulations may change after the contract is signed, requiring a change in the contract.
- Products originally specified may not be available.

Clause 55 of the MoWUD conditions of contract justifies that the quantities set out in the bill of quantities are the estimated quantities of the work, but they are not to be taken as the actual and correct quantities of the works to be executed by the contractor in fulfillment of his obligations under the contract. And also clause 57(5) of the same condition of contract states the works shall be measured in accordance with the method of measurement stated in the bill of quantities.

Valuation of variations

Marsh (2000) in a construction contract the employer agrees to pay the contractor a stated amount of money which is known as the provisional sum, for the construction of a certain work.

Whereas, changes to the provisional sum may occur as a result of variations arising for different reasons which lead to additions to or omissions from the original work during the course of

construction. But, it is necessary to control such changes and keep them as minimum as possible, since variations are usually the cause of conflict and delay of a construction project.

When a variation is validly issued the extra work remains to be valued. Under the MoWUD conditions of contract clause 52(1), it is mentioned that all extra or additional work done or work omitted by order of the engineer shall be valued at the rates and prices set out in the contract if, in the opinion of the engineer, the same shall be applicable. If the contract does not contain any rates or prices applicable to the extra or additional work then suitable rates or prices shall be agreed upon between the engineer and the contractor. In the event of disagreement the engineer shall fix such rates or prices as shall, in his opinion, are reasonable and proper.

Murdoch and Hughes (2000), there are three approaches to valuations of extra works.

i. The contractor and employer might negotiate a satisfactory sum, on the basis that parties to a contract are free to re-negotiate the terms at any time.
ii. The contract administrator follows express terms laid down in the contract for deriving a value from the contract documentation.
iii. The contractor follows express terms in the contract for deriving a value, subject to the approval of the contract administrator.

CHAPTER 3 METHODOLOGY

The study begins with a detailed literature review which is very helpful in understanding, identifying and categorizing construction payment related matters that commonly exist in the construction industry. The literature review is used as a method of identifying the different construction payment issues; the major payment problems, the possible factors that cause payment problems and effects of these problems on a construction project and the contracting parties as well.

3.1. Data Collection

The data used for the research is primary data and it is collected by a questionnaire that is designed for the same purpose and distributed to respondents of three target groups' employers, contractors and consultants, who have a direct participation on the projects under study.

3.2. Research population size

The population for this research is public building construction projects which are currently under construction; owned by three regional public agencies; Addis Ababa City Administration, Addis Ababa Saving Houses Development Enterprise and Addis Ababa Housing Development Project Office and constructed by contractors above grade 4 General Contractor (GC) and Building Contractor (BC) categories. The major reason for selecting these classes of contractors is in order to limit the population in to an affordable size. In addition to this, these classes are believed to run multimillion projects, have better understanding of contractual issues, and better record keeping practice.

The three public agencies have a total of 43 public building project sites under construction. But project sites which fulfill the selection criteria for this research; comprising above grade 4 category contractors are found to be 29 project sites. From these 29 project sites 2 project sites are closed and there is no information about the status of the sites. Thus, the total research population size is reduced to 27 public building project sites and it is decided to study the whole population therefore, the sample size for the study is equal to the population size.

3.3. Questionnaire design

The questionnaire designed for this research has three parts. In the first and the second part of the questionnaire respondents were asked open ended questions. The first part deals with the general information of the firm and the individual who gives response to the questionnaire. The second part of the questionnaire attempts to get basic information about the research topic and it begins by identifying whether construction payment is an issue in public building construction projects in Addis Ababa or not. In this part of the questionnaire it is also tried to investigate what payment problems exist in the public building construction projects in Addis Ababa, by asking the respondents to mention the payment problems that they faced in their experience.

The third part of the questionnaire is the structured part and it deals with the payment issues identified and grouped by the researcher in a way that will be suitable for the study. In this part the researcher categorized the payment issues in three different groups. These are: major construction payment problems, cause of construction payment problems and consequences of those payment problems. For each of the payment issues the researcher has identified different statements/variables from the detailed literature review carried out prior to designing the questionnaire. In this section of the questionnaire respondents were asked to show their level of agreement by giving rating to those statements/variables based on their frequency of occurrence in public building construction projects in Addis Ababa by using five different levels of agreement for each. The reasons for adopting this simple scale are to provide simplicity for the respondent to answer and to make evaluation of collected data easier.

3.4. Questionnaire Distribution

After deciding the research sample size i.e. 27 project sites, questionnaires were distributed and delivered in person to the representatives of the three target groups (the employer, the contractor and the consultant) who have a direct involvement and believed to have sufficient know-how about a specific project under study, in their respective construction sites.

The 27 project sites don't have a separate employer for each one of them i.e. one employer owns more than one project site and only one employer engineer is assigned for all the project sites. Taking this into consideration 16 questionnaires was distributed to the employer which is 27.59 % of the total number of questionnaires.

For each of the 27 project sites questionnaires are distributed for one representative contractor which fulfills the selection criteria and for one project site which is very huge site to be represented by one contractor, two contractors were selected to distribute the questionnaire. Hence, 28 questionnaires which are 48.27% of the total were distributed to contractors.

The same is true also for consulting companies, one consulting company supervises more than one project site most of the time two project sites thus 14 questionnaires which constitute 24.14 % of the total questionnaires were distributed to the representatives of consultants of the projects. Therefore a total of 58 questionnaires were distributed to the 27 selected project sites based on the above stated distribution frequency.

3.5. Method of data analysis

Both descriptive and inferential statistics are employed in the data analysis. In the analysis the "Mean Score" method is adopted to calculate the mean values of respondents' rankings.

The mean values for each variable is computed by using a simple statistical formula of arithmetic mean calculation for a frequency distribution.

$$\mathbf{M} = \frac{\sum \mathbf{Nr} * \mathbf{R}}{\sum \mathbf{Tr}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textit{equation (1)}$$

M = Mean value of ratings.

Nr = Number of respondents who give a specific rating.

R = Rating given by respondents to a specific issue. i.e. [5 to 1], from strongly agree to strongly disagree respectively.

Tr = Total number of respondents who gave different ratings.

The Spearman rank correlation coefficient is used to test for correlation between respondents' response to see if there is difference in ranking between two groups of respondents about causes of payment problems; these are Employers versus Contractors; Contractors versus Consultants; and Employers versus Consultants, on the causes of payment problems.

Fellows and Liu (2008) described the coefficient of correlation between ranks as it is a measure of the association between two variables which is determined from the ranks of observations of the variables and it is calculated using Spearman's coefficient of rank correlation ρ.

$$\rho = 1 - \frac{6\sum D^2}{n(n^2-1)} \quad \text{.....equation (2)}$$

ρ = Spearman's coefficient of rank correlation

D = the difference in ranking

n = the number of variables

Procedure for testing:

1. Define the null hypothesis (H_0) and the alternative hypothesis (H_A)

   The Null Hypothesis (H_0) is:

   There is no agreement in the causes of payment problems between two groups of respondents. (Employers verses Contractors), (Employers verses Consultants) and (Contractors verses Consultants)

   The Alternative Hypothesis (H_A) is:

   There is agreement in the causes of payment problems between two groups of respondents. (Employers verses Contractors), (Employers verses Consultants) and (Contractors verses Consultants)

2. Choose a value for ρ . (i.e. choose the significance level)
3. Calculate the value of the test statistic, (ρ_{cal}).
4. Compare the calculated value with a table of the critical values of the test statistic.
5. If the calculated value of the test statistic is less than the critical value from the table, accept the null hypothesis (H_0). If the absolute (calculated) value of the test statistic is greater than or equal to the critical value from the table, reject the null hypothesis (H_0) and accept the alternative hypothesis (H_A).

CHAPTER 4 DATA ANALYSIS AND DISCUSSION

4.1. Questionnaire response rate

The total number of questionnaires distributed to respondents was fifty eight as discussed in section 3.5 above and forty five of them are returned. But a number of the returned questionnaires are not completely answered; some questions were jumped by respondents mostly in the structured part of the questionnaire which becomes problematic for data analysis. Therefore only questionnaires which are totally answered are considered to be valid for this research.

From the sixteen questionnaires distributed to employer's representatives, eleven of the questionnaires were collected and eight of them were considered valid. From the twenty eight questionnaires distributed to respondents of contractors twenty questionnaires were returned and sixteen of them were considered valid. From the consultant's side, fourteen questionnaires were distributed and all fourteen questionnaires were collected out of which ten questionnaires were found as a valid response for the study. As shown in the table below, a total of fifty eight questionnaires were distributed to respondents and forty five of them were collected out of which thirty four questionnaires, which are considered to be valid based on the criteria of this research stated above, were collected which shows a 58.62% response rate.

Table 1: Questionnaire response rate

	Respondents			Total
	Employer	Contractor	Consultant	
Questionnaires distributed, (A)	16	28	14	58
Questionnaires returned	11	20	14	45
Valid responses, (B)	8	16	10	34
Response rate (valid), (C) = (B/A)*100	50%	57.14%	71.43%	58.62%

4.2. General information obtained from respondents

In the first part of questionnaire designed for this research, respondents were asked general information about their position and experience in their respective company to make sure that the respondents have sufficient educational qualification to make the information acquired reliable.

Respondents Experience

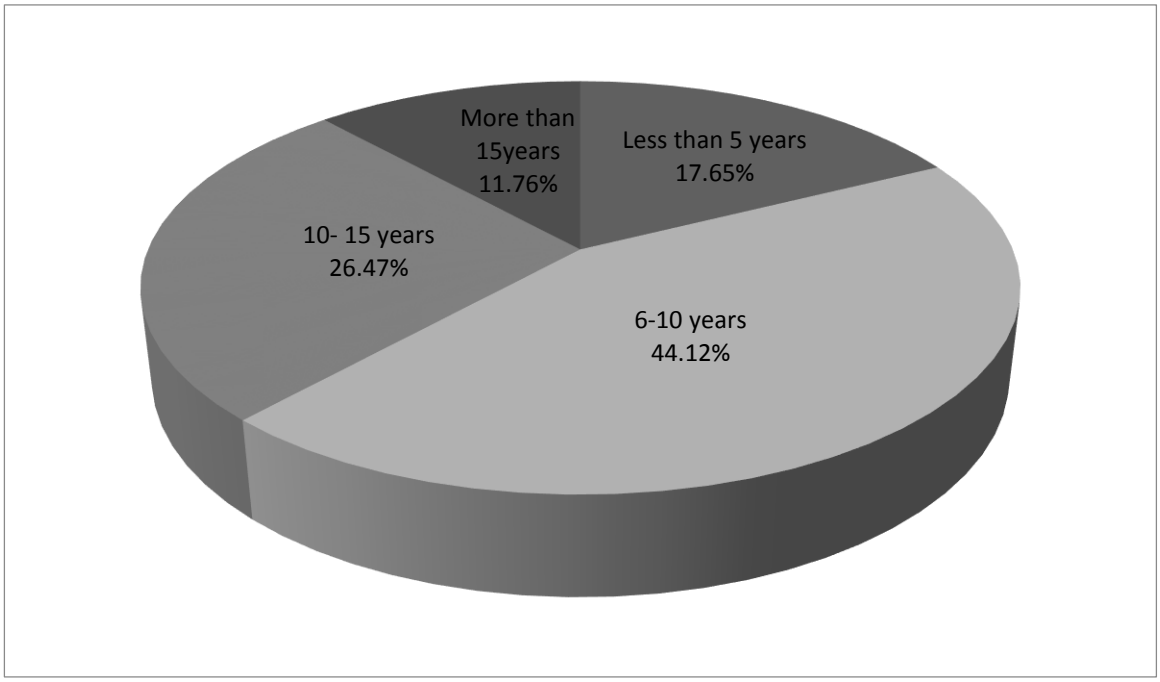

Figure 2: Respondents experience

Figure 2 shows that six respondents, three Quantity Surveyors and three Site Engineers (17.65%) have less than 5 years' experience; fifteen respondents, one Project Manager, three Resident Engineers, two Quantity Surveyors, six Site Engineers and three Employers' Engineers (44.12%) have 6-10 years of experience; nine respondents two Project Coordinators, two Project Managers and five Employers' Engineers (26.47%) have 10-15 years of experience; four respondents one Project Coordinator and three Project Managers (11.76%) have more than 15 years of experience.

As it can be observed from the figure above the respondents have ample and adequate knowledge and expertise with majority of more than five years of experience on public building constructions.

Thus, considering the high experience of the respondents, it can be concluded that the data obtained from the survey contains a wealth of information and reflects the actual situation in the public building constructions with respect to construction payment issues, which can help to draw reliable conclusions and recommendations for the research.

4.3. Basic information obtained from respondents

In the second part of questionnaire designed for this research, respondents were first asked whether construction payment is an issue in public building construction projects in Addis Ababa or not, and they were given a chance to agree or disagree with the question based on a five point Likert scale.

According to the thirty four valid responses collected from respondents and as it is illustrated in figure 5 below, 47.06% of them have strongly agreed and 52.94% of them have agreed that construction payment is an issue in public building construction projects in Addis Ababa.

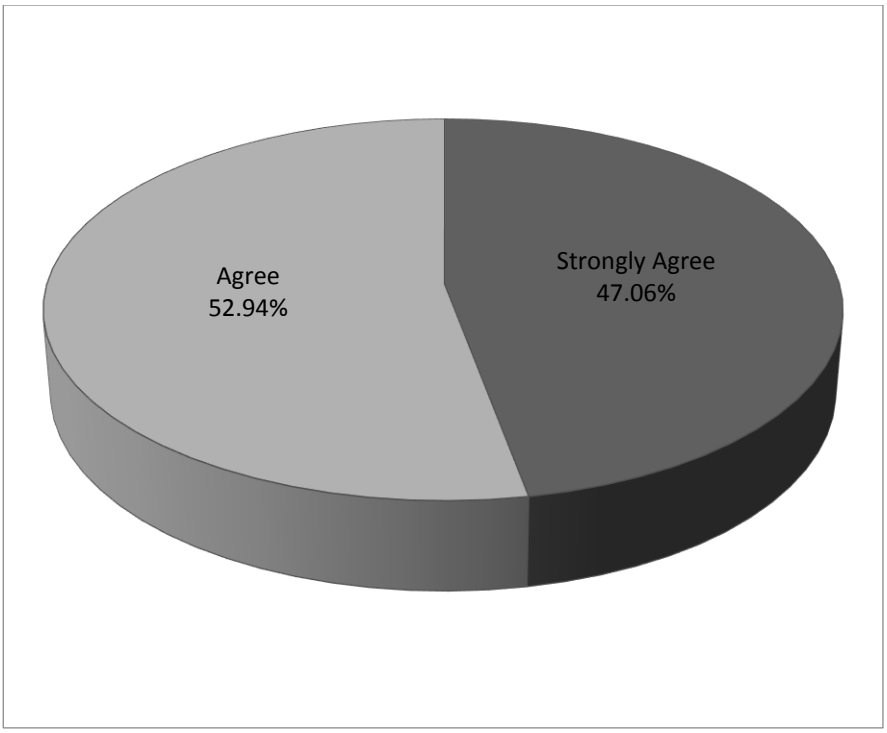

Figure 3: Level of agreement of respondents with the existence of the problem

As it can be observed from the figure, no respondent has disagreed with the presence of the problem, and the result obtained indicates that all of the respondents have at least agreed that construction payment is an issue in public building construction projects in Addis Ababa and this clearly shows that the problem is widespread in the selected project sites.

In the second part of the questionnaire respondents were also asked different questions about payment problems, major causes of the problems and their consequences, with open ended questions. The first question was about payment problems they have encountered with in public building construction projects.

From the responses obtained payment delay is observed to be the most common problem in all responses. All of the contractors' respondents state that there is always delay at the employer office while payment is issued. And this delay becomes frequent during budget closing time of the year. The respondents of employers' also agree that there is delay of payment during budget closing time by saying that "payments may delay until the next year budget is released from the government body".

The next question was about the causes of the payment. The respondents of the employers' put the liabilities on the contractors and some of them also on the consultants. The respondents say that contractor's payment request for works that are not executed will make the payments to delay at their office. Negligence of the consultants while checking the payment document are also the other cause of the payment issuing problems according to the respondents of employer's.

The responses obtained from contractors' representatives mainly blame the employer office with high corrupt practices and lack of good administration in employer's organization. Bureaucratic payment system of the employer was another frequent response obtained from the respondents. Contractors' representatives also criticize the general payment system of public construction projects. "Too many officials should sign on the payment document" and "Extended and annoying time taken for checking up the payment document" are their critics.

Respondents were also asked about the consequences of the payment problem on projects. "Delay in completion and progress of the project" are frequent responses obtained from respondents. "Leads to corruption for unethical professionals" is also another repetitive response. Contractors' representatives' reply that cash flow problem on the contractor is one of the consequences of the payment problem on projects which can lead to termination of contracts. Correspondingly disagreement between parties that disturb the working environment is regarded as consequences of the payment problem on projects by respondents.

Besides asking respondents the causes and consequences of payment problems it is tried to gather what recommendations do they have to alleviate the problems. Contractors' representatives' recommends that first the employer should have sufficient budget for the project then the employer should assign a representative with the knowledge of construction or skilled professional and reduce bureaucratic system and improve the general administration. Payment request should be presented based on the executed work amount and Contractors should be ethical on construction works are recommendations of employers' representatives. Similarly submitting payment request with full supporting documents such as test results, variation approvals and proper data recording sheet for sub structure works is recommended to reduce payment checking time.

From the above responses obtained from the respondents it can be concluded that payment delay is most common problem in public building construction projects in Addis Ababa caused by different reasons from the employer, the contractor and the consultant side. Bureaucratic payment system and corrupt practices of employees are found to be mutual responses caused from the employers' side. Requesting payment for works that are not executed are found to be common causes of payment problems from contractors' side. Negligence while checking the payment document is stated as cause of payment problems from consultants' side. Delay in completion and progress of the project and promoting corruption practices are found to be consequences of payment problems based on respondents' answers.

4.5. Identification of the major payment problems

In the questionnaire designed for the study, three different payment problems in the construction industry were listed and respondents were asked to show the existence or non-existence of those problems in public building construction projects in Addis Ababa, by giving rating of one to five based on the different levels of agreement stated in the questionnaire. Please refer appendix A.

In this research, for any of the statements outlined in the questionnaire and for which rating are given by respondents from the three parties, it is assumed that the mean value of ratings of aggregate responses obtained must be more than three for the statement or variable to be considered as relevant for the study. This assumption is made based on the fact that the respondents were requested to give a rating of one for 'strongly disagree', two for 'disagree' and three for an issue at which they are 'unsure'. Therefore, a mean value of one or two means the majority of the respondents disagreed on a specific statement (variable), and there is no doubt that this variable can be rejected. Whereas, mean value of three means the respondents is 50% sure and 50% unsure of a given statement. But considering an idea which the respondents are not sure about as true information is found illogical. Therefore it is assumed that statements with mean values of aggregate responses greater than three are the only appropriate ones for this research.

Hence, the rating given by different respondents are collected and mean values are determined for each, by using a simple statistical formula of arithmetic mean calculation as stated in section 3.6 above.

Accordingly, the rating for payment delay is the highest with mean values of ratings 4.25, 4.875, 4.6 from the employers, contractors and consultants responses respectively and the aggregate of the three is found to be 4.647, which indicates that payment delay is the most common and severe problem in public building construction projects in Addis Ababa, of the three types of problems considered.

According to the respondents of the contractors and consultants, partial payment of the sums due is regarded as the second major payment problem in public building construction projects

in the city, having a mean value of ratings 3.375 and 3.6 from each respectively. The response from the employers' respondents doesn't show that partial payment of sums due is a problem because the mean value of their responses is found to be 2.25, which in the case of this research is not accepted as a valid mean value of rating of respondents. But the mean value of aggregate responses from the three parties shows that partial payment of the sums due is the second ranked problem with mean value of 3.167.

Whereas, none payment of the sums due is found to have a mean value of 2.0, 2.125, 2.4 from the employers, contractors and consultants responses respectively and the aggregate of the three is found to be 2.176. Therefore non-payment of the sums due is not considered as a problem because its mean value is less than 3 and as explained above mean values of results only greater than three are considered to be correct information in this research. As a result of this none payment of sums due is not a problem in public building construction projects in Addis Ababa.

Table 2: Major payment problems

No	Payment problem	Mean values of ratings				Rank	Remark
		Emp.	Cont.	Cons.	Aggregate		
1	Payment delay	4.25	4.875	4.6	4.647	1st	OK
2	Partial payment	2.25	3.375	3.6	3.176	2nd	OK
3	None payment of sums due	2.00	2.125	2.4	2.176	3rd	NOT OK

* OK, *the aggregate mean value is greater than three and it is a relevant statement.*
*NOT OK, *the aggregate mean value is less than three and it isn't a relevant statement*.

4.6. Identification of the major causes of payment problems

Construction payment problems are caused by different reasons originated from the employer, contractor and consultant who are taking part in the projects. The second question that the respondents were asked in the third part of the questionnaire was about the causes of construction payment problems. Different causes of payment problems were outlined in the questionnaire as explained is section 3.4 above and they are allocated in a pattern that they are considered to be contributed from the employer's, the contractor's and the consultant's side.

Causes of payment problems from the employer's side

The responses obtained from the three parties are compiled on table 4 below, and the result shows that the mean values of ratings of all eleven causes outlined in the questionnaire are found to be above three. As it is illustrated in the table, the responses obtained indicate that bureaucratic payment system of the employer followed by frequent variation orders, problem with the measurement and valuation process and the employers failure to finance the project are found to be the top of the causes of construction payment problems that are contributed by the employer in public building construction projects in Addis Ababa.

Table 3: Causes of construction payment problems from the employer's side

No	Causes of Payment problem Contributed by the employer	Mean values of ratings				Rank
		Emp.	Cont.	Cons.	Aggregate	
1	Problem with the measurement and v aluation process	2.75	3.875	4	3.6471	3
2	Bureaucratic payment system of the employer	3.25	4.75	4.2	4.2353	1
3	Lack of commitment of employees of the employer	2.75	3.625	3.8	3.4706	4
4	Problem in understanding contract clauses	2.25	3.625	4	3.4118	5
5	Common corrupt practices of employees of the employer	2.25	3.875	3.6	3.4118	5
6	Suspending the work frequently	2.75	3.625	3.6	3.4118	5
7	The employer's failure to finance the project	3.25	3.75	3.8	3.6471	3
8	Frequent variation orders	3	4.25	3.8	3.8235	2
9	Refusal to pay for materials stored on job site	3.25	3.75	3	3.4118	5
10	Refusal to pay interest on late payment	2.5	3.5	3.6	3.2941	6
11	Inadequacy of the conditions of contract used, on payment matters	2.75	3.625	3.6	3.4118	5

According to the responses obtained, all the considered causes of payment problems in public building construction projects in Addis Ababa are illustrated in figure 4 below, from the lowest to the highest severe cause contributed by employers based on the aggregate mean values of the respective causes.

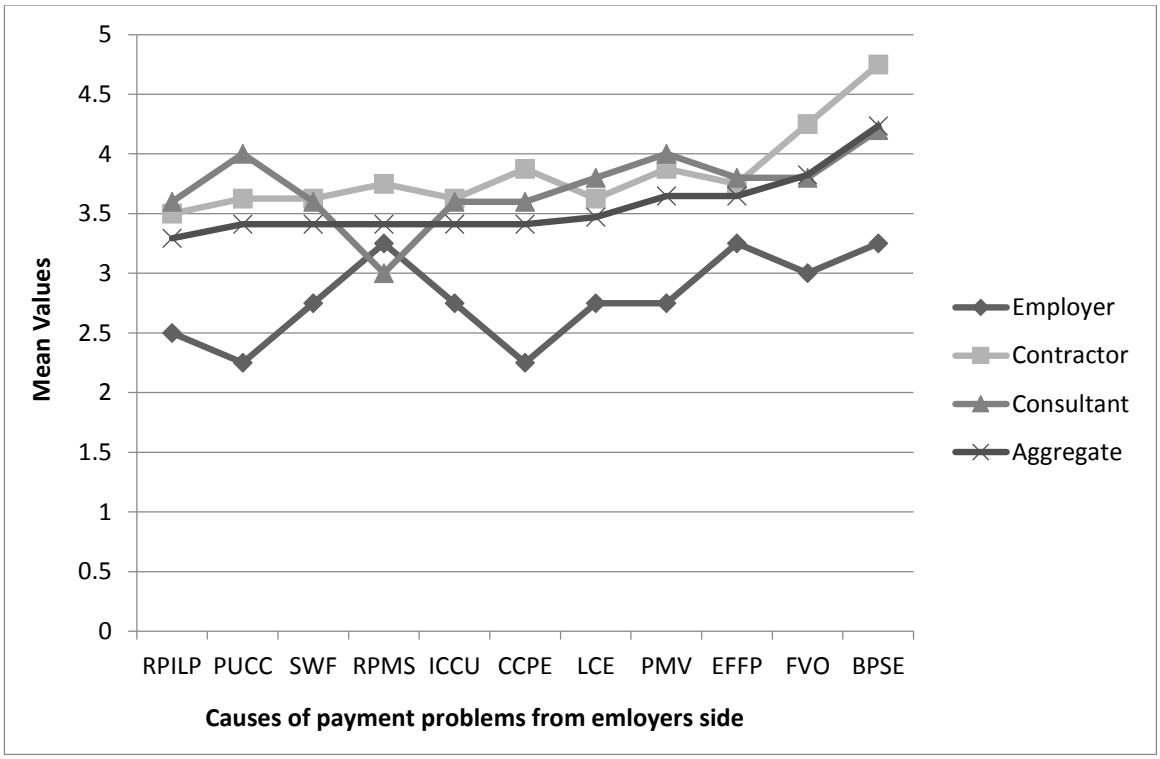

Figure 4: Graphic presentation of causes of problems from the employer's side

Where;

RPILP: Refusal to pay interest on late payment

PUCC: Problem in understanding contract clauses

SWF: Suspending the work frequently

RPMS: Refusal to pay for materials stored on job site

ICCU: Inadequacy of the conditions of contract used, on payment matters

CCPEE: Common corrupt practices of employees of the employer

LCEE: Lack of commitment of employees of the employer

PMVP Problem with the measurement and valuation process

EFFP: The employer's failure to finance the project

FVO: Frequent variation orders

BPSE: Bureaucratic payment system of the employer

Causes of payment problems from the contractor's side

The responses obtained from the three parties are summarized on table 4 below and the result shows all the nine possible causes of payment problems outlined in the questionnaire are considered to be the causes of the payment problems from the contractor's side in public building construction projects in the city. Among these; failure to make regular progress followed by submitting a request exceeding the estimated cost of the executed work, the contractors suspension of work, insufficient study and understanding of the contract documents, problem in understanding contract clauses are at the top of the causes of payment problem which are contributed by the contractors who are engaged in construction of public building construction projects in Addis Ababa.

Table 4: Causes of construction payment problems from the contractor's side

No	Causes of Payment problem Contributed by the contractor	Mean values of ratings				Rank
		Emp.	Cont.	Cons.	Aggregate	
1	Requesting payment for defective works	2.75	3.375	4	3.4118	4
2	Failure to make regular progress	3.25	4.125	4.2	3.9412	1
3	The contractors Suspension of work	2.75	3.625	3.8	3.4706	3
4	Insolvency/bankruptcy of the contractor	2.75	3.50	2.8	3.1176	6
5	Submitting a request exceeding the estimated cost of the executed work	3.00	3.75	3.8	3.5882	2
6	Delivery of Poor quality materials to the project site	2.75	3.2857	3.8	3.1176	6
7	Insufficient study and understanding of the contract documents.	3.25	3.125	4.2	3.4706	3
8	Problem in understanding contract clauses	3.00	3.25	4.2	3.4706	3
9	Disagreement in valuation of work completed	2.50	3.625	3.4	3.2941	5

According to the responses obtained, all the considered causes of payment problems in public building construction projects in Addis Ababa are illustrated in figure 5 below, from the lowest to the highest severe cause contributed by contractors based on the aggregate mean values of the respective causes.

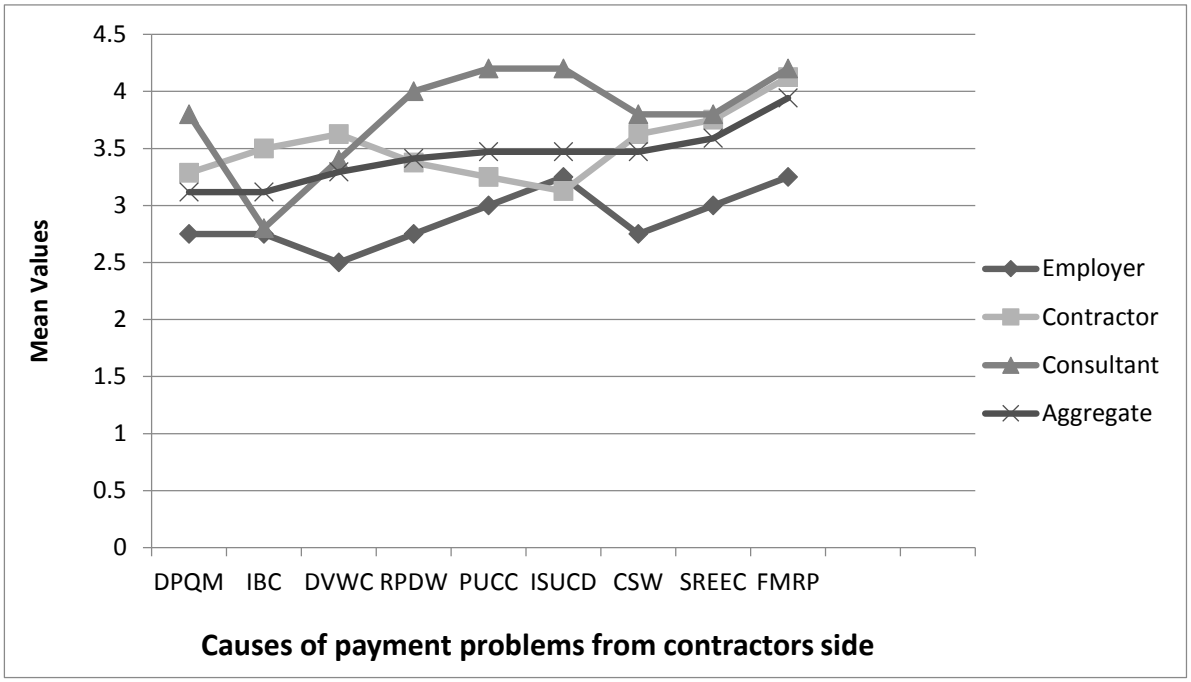

Figure 5: Graphic presentation of causes of problems from the contractor's side

Where;

DPQM: Delivery of Poor quality materials to the project site

IBC: Insolvency/bankruptcy of the contractor

DVWC: Disagreement in valuation of work completed

RPDW: Requesting payment for defective works

PUCC: Problem in understanding contract clauses

ISUCD: Insufficient study and understanding of the contract documents.

CSW: contractors Suspension of work

SREEC: Submitting a request exceeding the estimated cost of the executed work

FMRP: Failure to make regular progress

Causes from the consultant's side

Construction Payment problems are not caused by employers and contractors default only. Consultants also contribute for the occurrence of construction payment related problems in different ways. For the purpose of this study six different causes of payment problems that consultants may contribute are considered and outlined in the questionnaire and respondents were asked to give rating for each based on their occurrence in public building construction projects of Addis Ababa city.

The result obtained from respondents shows that all the six causes outlined are common in public building construction project of the city as summarized on table 5 below. According to the respondents, among the six causes outlined; favoring the employer or bias is ranked first and problem in valuation of variations, weakness in making decision on issues arising in the course of construction and absence of continuous supervision of the work under construction are the top causes of payment problems from the consultant's side in public building construction projects in the city.

Table 5: Causes of construction payment problems from the consultant's side

No	Causes of Payment problem contributed by the consultant	Mean value of ratings				Rank
		Emp.	Cont.	Cons.	Aggregate	
1	Problem in Valuation of variations	3	4.375	3.6	3.8235	2
2	Favoring the employer (bias)	3.75	3.8889	4	4.1176	1
3	Absence of continuous supervision of the work under construction	2.5	3.7778	3.8	3.7059	3
4	Withholding payment certificates wrongly	2.75	3.125	3.8	3.2353	4
5	Being dependent on the employer in valuing what is paid to the contractor	3	3.5	3	3.2353	4
6	Weakness in making decisions on issues arising in the course of construction	3.5	4	3.8	3.8235	2

According to the responses obtained, all the considered causes of payment problems in public building construction projects in Addis Ababa are illustrated in figure 6 below, from the lowest to the highest severe cause contributed by consultants based on the aggregate mean values of the respective causes.

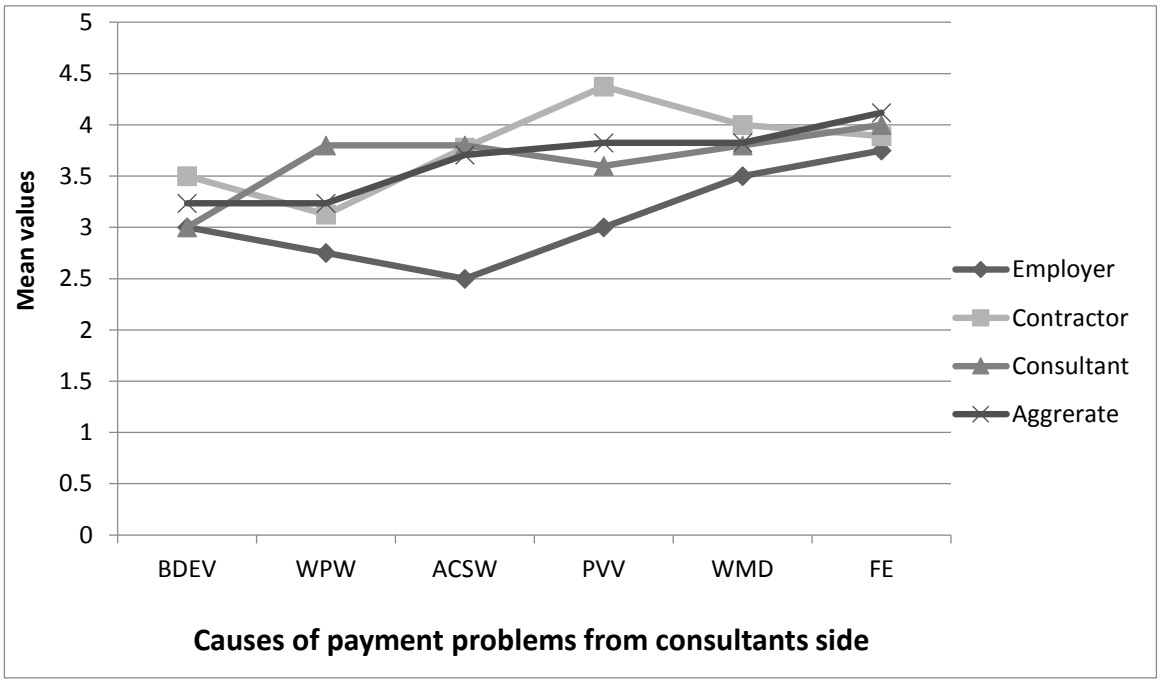

Figure 6: Graphic presentation of causes of problems from the consultant's side

Causes from the general aspect

In summary, the different causes are put together regardless of their origin or sources, compared and ranked based on their respective mean values of aggregate responses. As it is shown on table 6 below; bureaucratic payment system of the employer followed by the consultant's favoring the employer and the contractors' failure to make regular progress are the top three causes of construction payment problems with aggregate mean values of 4.2353, 4.1176, and 3.9412 respectively, among the twenty six causes identified.

Table 6: Summary of ranks of causes of construction payment problems

No	Causes of Payment problems	Mean values and ranks of responses							
		Emp.		Cont.		Cons.		Aggregate	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	Problem with the measurement and valuation process	2.75	5	3.875	7	4	2	3.6471	6
2	Bureaucratic payment system of the employer	3.25	3	4.75	1	4.2	1	4.2353	1
3	Lack of commitment of employees of the employer	2.75	5	3.625	10	3.8	3	3.4706	8
4	Problem in understanding contract clauses	2.25	7	3.625	10	4	2	3.4118	9
5	Common corrupt practices of employees of the employer	2.25	7	3.875	7	3.6	4	3.4118	9
6	Suspending the work frequently	2.75	5	3.625	10	3.6	4	3.4118	9
7	The employer's failure to finance the project	3.25	3	3.75	9	3.8	3	3.6471	6
8	Frequent variation orders	3	4	4.25	3	3.8	3	3.8235	4
9	Refusal to pay for materials stored on job site	3.25	3	3.75	9	3	6	3.4118	9
10	Refusal to pay interest on late payment	2.5	6	3.5	11	3.6	4	3.2941	10
11	Inadequacy of the conditions of contract used, on payment matters	2.75	5	3.625	10	3.6	4	3.4118	9
12	Requesting payment for defective works	2.75	5	3.375	12	4	2	3.4118	9
13	Failure to make regular progress	3.25	3	4.125	4	4.2	1	3.9412	3
14	The contractors Suspension of work	2.75	5	3.625	10	3.8	3	3.4706	8
15	Insolvency/bankruptcy of the contractor	2.75	5	3.5	11	2.8	7	3.1176	12
16	Submitting a request exceeding the estimated cost of the executed work	3	4	3.75	9	3.8	3	3.5882	7
17	Delivery of Poor quality materials to job site	2.75	5	3.2857	13	3.8	3	3.1176	12
18	Insufficient study and understanding of the contract documents.	3.25	3	3.125	15	4.2	1	3.4706	8
19	Problem in understanding contract clauses (contractors')	3	4	3.25	14	4.2	1	3.4706	8
20	Disagreement in valuation of work completed	2.5	6	3.625	10	3.4	5	3.2941	10
21	Problem in Valuation of variations	3	4	4.375	2	3.6	4	3.8235	4

22	Favoring the employer (bias)	3.75	1	3.8889	6	4	2	4.1176	2
23	Absence of continuous supervision of the work under construction	2.5	6	3.7778	8	3.8	3	3.7059	5
24	Withholding payment certificates wrongly	2.75	5	3.125	15	3.8	3	3.2353	11
25	Being dependent on the employer in valuing what is paid to the contractor	3	4	3.5	11	3	6	3.2353	11
26	Weakness in making decisions on issues arising in the course of construction	3.5	2	4	5	3.8	3	3.8235	4

4.7. Test for Agreement on causes of payment problems among respondents

In this section respondents' response will be tested for correlation using Spearman rank correlation coefficients, to see if there is difference in ranking between two groups of respondents; these are Employers versus Contractors; Contractors versus Consultants; and Employers versus Consultants, on the causes of payment problems. The purpose of this test is to evaluate whether consensus of opinions exist among respondents and also to avoid being deceived by chance occurrences of responses.

Paulson (2003) states that correlation is the measure of association between variables and a correlation of '1' is a perfect fit, and a correlation of '0' is total randomness (i.e., there is no relationship between the variables). In non-parametric statistics, we do not use the 0-1 scale but only whether the correlation is significant or not significant at a specific α (confidence interval). He also added that a useful and very well-known non-parametric correlation coefficient test involves the Spearman rank correlation coefficient.

Fellows and Liu (2008) described the coefficient of correlation between ranks as it is a measure of the association between two variables which is determined from the ranks of observations of the variables and it is calculated using Spearman's coefficient of rank correlation ρ.

$$\rho = 1 - \frac{6\sum D^2}{n(n^2-1)} \quad \text{.....equation (2)}$$

ρ = Spearman's coefficient of rank correlation

D = the difference in ranking

n = the number of variables

The Null Hypothesis (H_0) is:

There is no agreement in the causes of payment problems between two groups of respondents.

The Alternative Hypothesis (H_A) is:

There is agreement in the causes of payment problems between two groups of respondents. In order to decide whether to accept or reject the null hypothesis, the level of significance 95% (ρ = 0.05) is chosen.

If the calculated value of ρ is greater than the chosen critical value, (H_0) is rejected, i.e. there is evidence of a statistically significant agreement between the two groups of respondents. If the calculated value of ρ is less than the chosen critical value, (H_0) is accepted**,** i.e. there is no evidence of a statistically significant agreement between the two groups.

Accordingly, the spearman's rank correlation coefficient is calculated using equation 2 (the spearman's rank correlation coefficient formula). Whereas, before directly using the formula it is a must to determine the difference of ranks between each pair and the detailed calculation is illustrated in table 7 below, followed by the determination of spearman's rank correlation coefficient for the three pairs of respondents.

Table 7: Spearman's rank correlation coefficient determination

No	Causes of Payment problems	Rank			Differences					
					Emp-Con		Emp-Cons		Con-Cons	
		Emp	cont	cons	D	D^2	D	D^2	D	D^2
1	Problem with the measurement and valuation process	5	7	2	2	4	3	9	5	25
2	Bureaucratic payment system of the employer	3	1	1	2	4	2	4	0	0
3	Lack of commitment of employees of the employer	5	10	3	5	25	2	4	7	49
4	Problem in understanding contract clauses	7	10	2	3	9	5	25	8	64
5	Common corrupt practices of employees of the employer	7	7	4	0	0	3	9	3	9
6	Suspending the work frequently	5	10	4	5	25	1	1	6	36
7	The employer's failure to finance the project	3	9	3	6	36	0	0	6	36
8	Frequent variation orders	4	3	3	1	1	1	1	0	0
9	Refusal to pay for materials stored on job site	3	9	6	6	36	3	9	3	9
10	Refusal to pay interest on late payment	6	11	4	5	25	2	4	7	49
11	Inadequacy of the conditions of contract used, on payment matters	5	10	4	5	25	1	1	6	36
12	Requesting payment for defective works	5	12	2	7	49	3	9	10	100
13	Failure to make regular progress	3	4	1	1	1	2	4	3	9
14	The contractors Suspension of work	5	10	3	5	25	2	4	7	49
15	Insolvency/bankruptcy of the contractor	5	11	7	6	36	2	4	4	16
16	Submitting a request exceeding the estimated cost of the executed work	4	9	3	5	25	1	1	6	36
17	Delivery of Poor quality materials to job site	5	13	3	8	64	2	4	10	100
18	Insufficient study and understanding of the contract documents.	3	15	1	12	144	2	4	14	196
19	Problem in understanding contract clauses (contractors')	4	14	1	10	100	3	9	13	169
20	Disagreement in valuation of work completed	6	10	5	4	16	1	1	5	25
21	Problem in Valuation of variations	4	2	4	2	4	0	0	2	4
22	Favoring the employer (bias)	1	6	2	5	25	1	1	4	16
23	Absence of continuous supervision of the work under construction	6	8	3	2	4	3	9	5	25
24	Withholding payment certificates wrongly	5	15	3	10	100	2	4	12	144
25	Being dependent on the employer in valuing what is paid to the contractor	4	11	6	7	49	2	4	5	25

26	Weakness in making decisions on issues arising in the course of construction	2	5	3	3	9	1	1	2	4
				$\sum D^2$	-	841	-	126	-	1231

The Spearman's coefficient of rank correlation for the three pairs of respondents' category is calculated as follows;

$$\rho = 1 - \frac{6\sum D^2}{n(n^2-1)}$$

- Employer-Contractor; $\rho = 1 - \frac{6*841}{26(26^2-1)} =$ ***0.7124***
- Employer-Consultant; $\rho = 1 - \frac{6*126}{26(26^2-1)} =$ ***0.9569***
- Contractor-Consultant; $\rho = 1 - \frac{6*1231}{26(26^2-1)} =$ ***0.5791***

The spearman test static table (see appendix B) shows the minimum correlation coefficient for α of 0.05 (i.e. for 95% confidence level) and number of variables (n) of 26 to be **0.3299**.

Table 8: Summary of the correlation test

Respondents	Spearman's coefficient of rank correlation, ρ	Critical value of ρ (From Appendix B	Significance for ρ < 0.05	Remark
Employer-Contractor	0.7124	0.3299	significant	Reject the Null Hypothesis
Employer-Consultant	0.9569	0.3299	significant	Reject the Null Hypothesis
Contractor-Consultant	0.5791	0.3299	significant	Reject the Null Hypothesis

All the three results summarized in table 8 above, are greater than the critical values of ρ, so the hypothesis that there is no significant agreement between the respondents is rejected i.e. the null hypothesis is rejected. Therefore it can be concluded that there is strong correlation between the attitudes of the respondents in all the three groups and hence the alternative hypothesis shall be accepted. This means that most of the respondents have the same perception on the causes of payment problems.

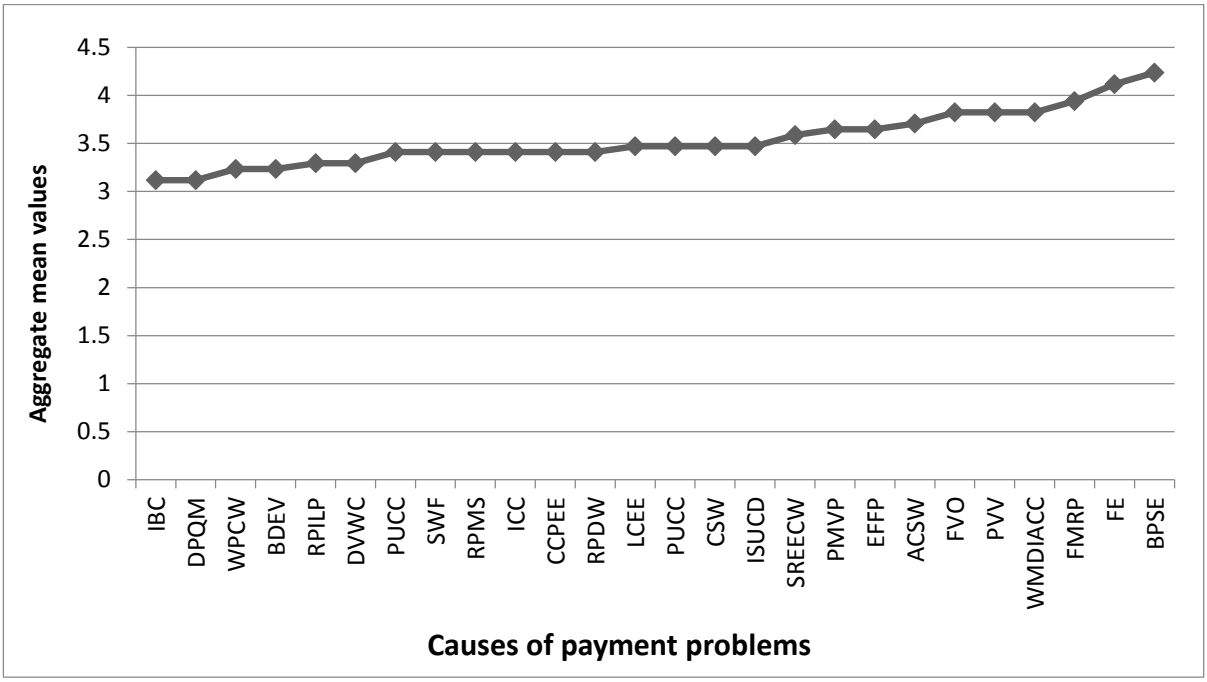

Figure 7: Graphic presentation of general causes of payment problems

4.8. Consequences of construction payment problems

The payment problems identified and discussed so far had their own impact on the projects under study. In the questionnaire designed for the study, five possible consequences of construction payment problems were listed and respondents were asked to give them ratings based on their occurrence in public building construction projects in Addis Ababa. Accordingly, the respondents have given ratings for those possible consequences of payment problems outlined, and the mean values of ratings are summarized under table10 below.

Table 9: Consequences of payment problems

No	Major consequences of the payment problems	Mean value of ratings							
		Emp.		Cont.		Cons.		Aggregate	
		Mean	Rank	Mean	rank	Mean	rank	Mean	Rank
1	Delay of project completion time	4	1	4.875	1	4.8	1	4.6471	1
2	Project Cost overrun	3	3	4.625	2	4.8	1	4.2941	2
3	Bankruptcy of contractors	3	3	3.8889	4	4.6	2	4.1176	3
4	Poor/Lower quality work	3	3	3.5	5	4.8	1	3.7647	5
5	Dispute between the parties in the contract	3.25	2	4.375	3	4.2	3	4.0588	4

As it is illustrated in the table, the responses obtained indicate that delay of project completion time is first major consequence of payment problem and it is followed by the project cost overrun and bankruptcy of contractors. Dispute between the parties in the contract and Poor/Lower quality work are ranked to be fourth and fifth consequences of payment problem respectively based on the result obtained from respondents.

According to the responses obtained, all the considered consequences of payment problems in public building construction projects in Addis Ababa are illustrated in figure 8 below, based on their aggregate mean values from the lowest to the highest severe as ranked by the three target groups.

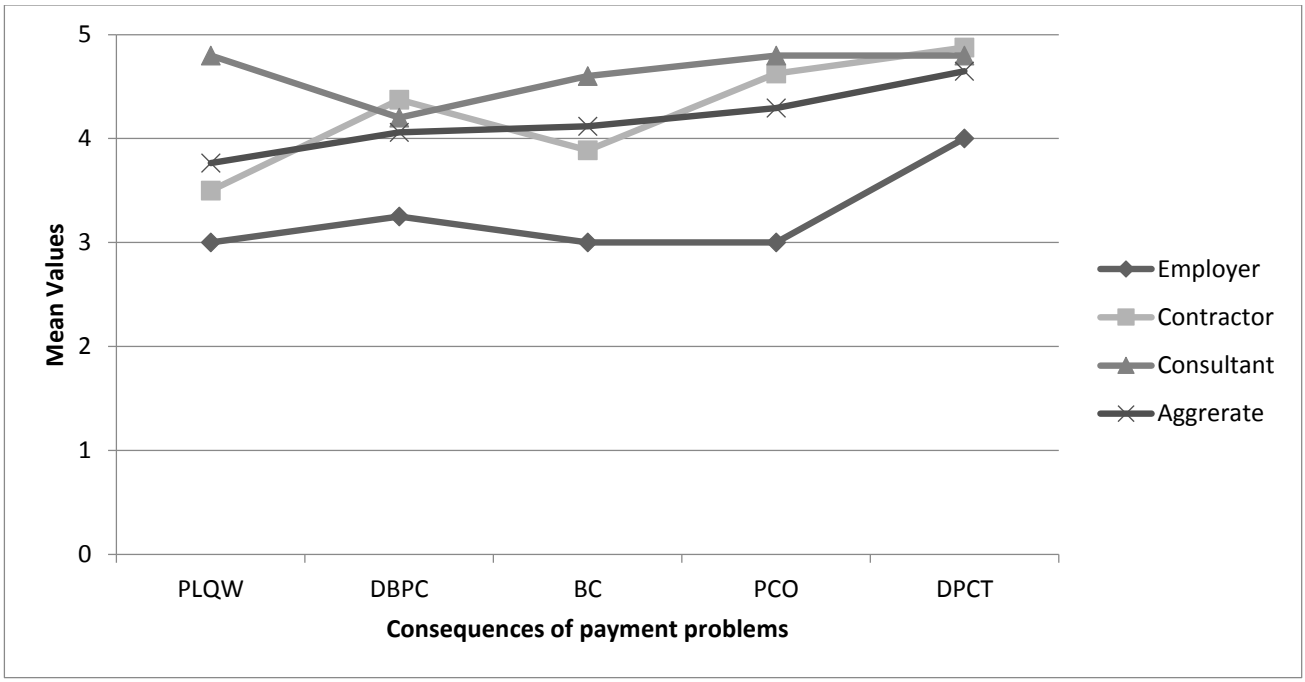

Figure 8: Graphic presentation of consequences of payment problems

Where;

PLQW: Poor/lower quality work

DBPC: Dispute between the parties in the contract

BC: Bankruptcy of contractors

PCO: Project cost overrun

DPCT: Delay of project completion time

CHAPTER 5 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Summary

The main objective of this research is to identify the major payment problems, to find out the major causes and consequences of these problems in public building construction projects in Addis Ababa. The literature review is used as a method of identifying the different construction payment issues; the major payment problems, the possible factors that cause payment problems based on their origin i.e. from the employer side, from the contractor side and from the consultant side and regardless of their origin, and effects of these problems on a construction project and the contracting parties as well. The data gathered from the survey are analyzed using the mean score method and correlated using Spearman correlation coefficient. The analysis of the results from the open-ended part of the questionnaire was carried out using descriptive analysis. Based on the analysis made and the results obtained from the survey, the study has come out with the conclusion based on the research questions.

5.2. Conclusions

The first research question was to identify the major construction payment problems in public building construction projects in Addis Ababa and this study has found that, payment delay is the most common problem and partial payment of the sums due is the second most common problem which suffers public building construction projects in Addis Ababa.

The second research question was to find out the major causes of payment problems in public building construction projects in Addis Ababa. The research tries to identify these major causes by separating them based on their origin i.e. the employer, the contractor and the consultant and regardless of their origin.

Accordingly, Bureaucratic payment system of the employer, frequent variation orders and problem with the measurement and valuation process are found to be causes of payment problems in public building construction projects in Addis Ababa, originated from the employer side.

Failure to make regular progress, submitting a request exceeding the estimated cost of the executed work, the contractor's suspension of work, insufficient study and understanding of the contract documents are found to be causes of payment problems in public building construction projects in Addis Ababa, originated from the contractor side.

Favoring the employer (bias), problem in valuation of variations, weakness in making decisions on issues arising in the course of construction, absence of continuous supervision of the work under construction are found to be causes of payment problems in public building construction projects in Addis Ababa, originated from the consultant side.

Bureaucratic payment system of the employer, the consultant's favoring the employer (bias) and the contractor's failure to make regular progress are found to be the top three causes of payment problems regardless of their origin in public building construction projects in Addis Ababa.

Identifying how these problems affect the public projects is another research question of this study. From the analysis of the study it is found that public projects in Addis Ababa are affected by payment problems. The effects of these problems are seen on the project's completion time i.e. delay of the project, on the project's cost i.e. cost overrun of the project and on contractors involved in the project i.e. bankruptcy of their company.

5.3. Recommendations

1. The employer's payment system is highly bureaucratic and vulnerable to delay. Thus, Contractors are subjected to unexpected payment delays, even in times where their work was entirely satisfactory. So the employer has to simplify the payment process by minimizing the bureaucracy.

2. Contractors should show regular and satisfactory progress in their works, by directly investing the finance from the employer on a specific project and their payment request should not include amounts for works that are not completed or constructed with defects, since this will lead to unnecessary wastage of time from the consultant's and employer's side for checking and correction of the quantities, which finally will cause delay of payment.

3. Consultants, even though they are employed by the employer, they should serve both parties without any bias to either of them and works should be supervised properly from the outset and whenever problems happen during construction they should be handled in a way that the fastest possible decisions will be made.

4. Further study should be conducted on additional costs incurred because of the payment problems identified by this research.

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APPENDIXES

APPENDIX A: QUESTIONNAIRE

ADDIS ABABA SCIENCE AND TECHNOLOGY UNIVERSITY

A questionnaire on Assessment of Construction Payment Problems in Public Building Construction Projects in Addis Ababa

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR MBA DEGREE
IN CONSTRUCTION MANAGEMENT

Objective of the questionnaire

The research titled **Assessment of construction payment problems in public building construction projects in Addis Ababa** will be conducted for the partial fulfillment of the requirements for MBA Degree in Construction Management. This questionnaire is designed to get your expert opinion on the research which will be conducted to identify the major payment problems in building construction projects in Addis Ababa.

Instruction

Please read all the questions very carefully and give your honest response for each. The information gathered from you will be kept strictly confidential and will be used for academic purpose only. All the data you provide will be used for the generalized analysis of the research and no organization or individual will be identified and mentioned in the process.

I thank you in advance for your kind cooperation and time!

PART I

The following questions are designed to get general information about the organization and respondents of the questionnaire. So please, give appropriate response for each.

1. Name of your organization_____.
2. How long has your organization been involved in public building construction projects in Addis Ababa?
   - ☐ Less than 5 years
   - ☐ 6-10 years
   - ☐ More than 10 years
3. In how many public building construction projects in Addis Ababa has your organization been involved to date?
   - ☐ Less than 5 projects
   - ☐ 6-10 projects
   - ☐ More than 10 projects
4. What is your job title in the organization? Please state your experience in public building construction projects.

   _____.

   _____.

PARTII:

Basic information on payment issues in public building Construction Projects in Addis Ababa.

You are kindly requested to rate and show your level of agreement or disagreement for each statement given in the table by putting a tick (√) mark.

1. Construction payment is an issue in public building construction projects in Addis Ab☐
   - Strongly Agree
   - ☐ Agree
   - ☐ Unsure
   - ☐ Disagree
   - ☐ Strongly Disagree
2. What payment problems have you faced in building construction projects in Addis Ababa

   _____
   _____.
3. What were the causes for the payment problem that you were confronted with?

   _____
   _____
   _____.
4. What were the consequences of these payment problems on the project?

   _____
   _____
   _____
   _____
5. What do you recommend to alleviate these payment problems?

   _____
   _____
   _____
   _____.

PART III

The following table consists of a list of statements identified from literature survey, concerning the different payment problems stated above. A 5-point scale is provided on the top right corner of the table. Based on your experience you are kindly requested to rate and show your level of agreement or disagreement for each statement given in the table by putting a tick (√) mark under each of your preferences.

[5]…….Strongly agree

[4]…….Agree

[3]…….Unsure

[2]…….Disagree

[1]…….Strongly disagrees

i. What are the major payment problems?

	STATEMENTS	LEVEL OF AGREEMENT				
		5	4	3	2	1
1	Payment delay					
2	Partial payment					
3	None payment of the sums due					

ii. Payment Problems caused from the employer side.

	STATEMENTS	LEVEL OF AGREEMENT				
		5	4	3	2	1
1	Problem with the measurement and valuation process					
2	Bureaucratic payment system of the employer					
3	Lack of commitment of employees of the employer					
4	Problem in understanding contract documents and clauses					
5	Common corrupt practices of employees of the employer					
6	Suspending the work frequently					
7	The employer's failure to finance the project					
8	Frequent variation orders					
9	Refusal to pay for materials stored on job site					
10	Refusal to pay interest on late payment					
11	Inadequacy of the conditions of contract used, on payment matters					

iii. Payment Problems caused from the contractors side.

	STATEMENTS	LEVEL OF AGREEMENT				
		5	4	3	2	1
1	Requesting payment for defective works					
2	Failure to make regular progress					
3	The contractors suspension of work					
4	Bankruptcy of the contractor					
5	Submitting a request exceeding the estimated cost of the executed work					
6	Delivery of Poor quality materials to the project site					
7	Insufficient understanding of the contract documents.					
8	Problem in understanding contract clauses					
9	Disagreement in valuation of work completed					

iv. Payment Problems caused from the consultant side.

	STATEMENTS	LEVEL OF AGREEMENT				
		5	4	3	2	1
1	Problem in Valuation of variations					
2	Favoring the employer (bias)					
3	Absence of continuous supervision of the work under construction					
4	Withholding payment certificates wrongly					
5	Being dependent on the employer in valuing what is paid to the contractor					
6	Weakness in making decisions					

v. The consequences of these payment problems.

	STATEMENTS	LEVEL OF AGREEMENT				
		5	4	3	2	1
1	Delay of project completion time					
2	Project Cost overrun					
3	Bankruptcy of contractors					
4	Poor/Lower quality work					
5	Dispute between the parties in the contract					

APPENDIX B: SPEARMAN TEST STATIC TABLE

n	.001	.005	.010	.025	.050	.100
4	—	—	—	—	.8000	.8000
5	—	—	.9000	.9000	.8000	.7000
6	—	.9429	.8857	.8286	.7714	.6000
7	.9643	.8929	.8571	.7450	.6786	.5357
8	.9286	.8571	.8095	.7143	.6190	.5000
9	.9000	.8167	.7667	.6833	.5833	.4667
10	.8667	.7818	.7333	.6364	.5515	.4424
11	.8364	.7545	.7000	.6091	.5273	.4182
12	.8182	.7273	.6713	.5804	.4965	.3986
13	.7912	.6978	.6429	.5549	.4780	.3791
14	.7670	.6747	.6220	.5341	.4593	.3626
15	.7464	.6536	.6000	.5179	.4429	.3500
16	.7265	.6324	.5824	.5000	.4265	.3382
17	.7083	.6152	.5637	.4853	.4118	.3260
18	.6904	.5975	.5480	.4716	.3994	.3148
19	.6737	.5825	.5333	.4579	.3895	.3070
20	.6586	.5684	.5203	.4451	.3789	.2977
21	.6455	.5545	.5078	.4351	.3688	.2909
22	.6318	.5426	.4963	.4241	.3597	.2829
23	.6186	.5306	.4852	.4150	.3518	.2767
24	.6070	.5200	.4748	.4061	.3435	.2704
25	.5962	.5100	.4654	.3977	.3362	.2646
26	.5856	.5002	.4564	.3894	.3299	.2588
27	.5757	.4915	.4481	.3822	.3236	.2540
28	.5660	.4828	.4401	.3749	.3175	.2490
29	.5567	.4744	.4320	.3685	.3113	.2443
30	.5479	.4665	.4251	.3620	.3059	.2400

(Source; Paulson, 2003)